ABSTRACT

A communications signal which carries a purely digital wrapper signal and a method and system for generating it and extracting overhead information therefrom. The wrapper signal can be received by a high-performance format-specific receiver at the end of the network as part of the overall payload, but can also be detected by a low-bandwidth payload-bit-rate-insensitive receiver at an intermediate node. This is achieved by using alternating payload and wrapper segments and providing special digital coding on the wrapper segments. Specifically, each wrapper segment consists of a contiguity of signal level sequences, each of which is a multi-bit symbol that encodes a bit in the overhead bit stream. Each of the symbols is thus a signal level sequence having one of two possible transition patterns, with the appropriate symbol being chosen depending on whether the overhead bit is a logic "zero" or a logic "one". The two symbol patterns which represent logic "zero" and logic "one" each contain enough transitions to meet synchronization and automatic gain control requirements associated with various network equipment, while containing a sufficiently distinct average signal level (or pulse density) to allow a receiver to associate the resultant short-term D.C. offset with the correct wrapper symbol.